Chapter 2 Alternatives Analysis

2.1 Introduction

The development of project alternatives for the Route 101 EA/EIR began with an initial evaluation of a wide array of transportation strategies to solve the existing and anticipated traffic problems in the project area. Several criteria were considered, including cost; feasibility (policy, engineering, construction); means of minimizing environmental or social impacts; addressing the goals of the Sonoma County Transportation Authority (SCTA), the City of Santa Rosa, the Metropolitan Transportation Commission (MTC) and Caltrans; and best serving public interest.

The following alternatives were selected for further detailed study: 1) the No-Build Alternative; and 2) the proposed project considered for implementation, consisting of the Caltrans high occupancy vehicle (HOV) widening project. Those project specific alternatives removed from further consideration are also explained below. The alternative examination process ensures that any one particular alternative has not been prematurely discarded from consideration.

2.2 Alternatives Development Process

As a result of the alternatives analysis process described in Chapter 2.4, three alternatives were eliminated from further consideration. Due to policy considerations or design/construction restrictions, only the No-Build and the proposed project were selected for further detailed environmental study.

All alternatives that received an appreciable amount of analysis involved adding lanes for High Occupancy Vehicles (HOVs). HOV lanes were identified as the appropriate project strategy because of their emphasis as a superior mobility solution, both regionally and locally. Since at least 1990, capacity-increasing highway projects in the Bay Area have typically incorporated HOV elements. The Metropolitan Transportation Commission (MTC), the Bay Area's regional transportation planning agency, adopted the region's first HOV Master Plan in 1990. In that year, there were 64 lane miles of HOVs in the Bay Area. The HOV Master Plan identified 470 potential new miles of HOV lanes. The HOV Master Plan has become the system blueprint for identifying and funding HOV lanes in the region. By 1996 there were 270 miles of HOV lanes in the Bay Area. The 1997 HOV Master Plan Update

proposed 149 additional HOV lane miles, including HOV lanes on Route 101 from Route 12 to Steele Lane in Santa Rosa.

The region's planning and funding documents identify the Route 101 widening project from Route 12 to Steele Lane as an HOV project as well. The 2001 Regional Transportation Plan (RTP) (amended November 2002) identifies the project as "US 101 northbound and southbound HOV lanes from Route 12 to Steele Lane in Santa Rosa." The 2003 Transportation Improvement Program (TIP), which documents funding commitments, identifies the project as "including HOV lanes." The 2002 HOV Master Plan Update shows the project as funded. According to the 2002 HOV Lane Master Plan Update, it is MTC's long term goal to eventually develop a continuous HOV system on Route 101 from Santa Rosa to Mill Valley.

Sonoma County supports HOV projects on the 101 corridor as well. Sonoma County's General Plan Circulation and Transit Element (1989) policy CT-2n is to "Develop the planned additional travel lanes on Highway 101 to allow for high occupancy vehicles (HOV) and transit use during peak commute periods."

Air Quality Benefits of HOV Lanes. HOV lane alternatives show lower regional emissions of air pollutants than mixed flow lane alternatives. MTC's studies have related HOV lanes to reductions in emissions of Reactive Organic Gases and oxides of nitrogen. The Bay Area Air Quality Management District's Clean Air Plan includes a list of Transportation Control Measures to be implemented to reduce vehicle emissions. TCM 8 in the Bay Area 2000 Clean Air Plan is to "Construct Carpool / Express Bus Lanes on Freeways."

Mobility Benefits of HOV Lanes. Carpooling, vanpooling, and express bus services have become increasingly important to meeting the mobility needs of the Bay Area as the decentralization of population and employment has occurred. It is sometimes overlooked that buses are allowed in HOV lanes, but buses have high potential for providing mobility to a large number of people.

According the the MTC HOV Master Plan, the value of the HOV lane system is demonstrated by an evaluation of how well the HOV lane segments perform in carrying people when compared to the mixed-flow lanes on the same freeway segments. MTC evaluated "productivity" of HOV lanes using the ratio of people per hour carried in the HOV lane to the average number of people per hour in the adjacent mixed-flow lanes. In observations conducted in peak traffic hours in 2001, MTC found that ten out of the eleven Bay Area HOV lanes carried more people per

lane than the adjacent mixed flow lanes. There were no HOV lanes in Sonoma County in 2001, so no Sonoma HOV lane productivity measure is available from this study, but the observation for neighboring Marin County for the HOV lane on US Highway 101 found that the HOV lane carried three times as many people per lane as the adjacent mixed-flow lanes. If HOV policies are intended to promote highways transporting "people, not cars," then the 2001 MTC productivity evaluation shows HOV lanes' potential for carrying a high number of people.

2.3 Alternatives Considered

2.3.1 No-Build Alternative

The No-Build Alternative is a no-action alternative. Under this alternative, Route 101 would retain its present configuration and location. It would receive only minor operational and safety improvements that would support the continuing operation of the existing freeway within the project area, when needed. The No-Build Alternative would produce no immediate environmental impacts and, consequently, no mitigation measures would be required. The existing local access ramps would remain unchanged at 3rd and 6th Streets (within downtown Santa Rosa), at College Avenue, and at Steele Lane. Southbound Route 101 would retain its collector-distributor road between SR-12 and 3rd Street. The auxiliary lanes between College Avenue and 6th Street as well as between Steele Lane and Bicentennial Way would remain in their current configuration. Northbound Route 101 would also keep its auxiliary lane between SR-12 and 3rd Street. Also under this alternative, current freeway management activities would be maintained.

2.3.2 Proposed Alternative

Caltrans proposes to widen Route 101 in the City of Santa Rosa from four lanes to six lanes between SR-12 and immediately north of Steele Lane. The additional lanes would be operated as HOV lanes during peak periods. Most of the widening would be in the median. In addition, the proposed alternative would make the following improvements that are listed beginning at the southern end of the project progressing north.

- Widen the eastbound SR-12 connector ramp to southbound Route 101 from one to two lanes.
- Widen the westbound SR-12 connector ramp to southbound Route 101 from one to two lanes.

- Construct a collector-distributor road on northbound Route 101 between SR-12 and the 3rd Street off-ramp on the outside (right hand side) of the existing roadway. This road would collect traffic from the connector ramp from eastbound SR-12, the connector ramp from westbound SR-12, and traffic exiting from northbound Route 101. The road would then distribute traffic to the 3rd Street exit in downtown Santa Rosa or to northbound Route 101 farther down the road. A raised curb would extend between much of the collector-distributor road between itself and mainline Route 101.
- Replace the Santa Rosa Creek Bridge in order to accommodate the additional lanes.
- Replace the existing northern pedestrian over crossing with a new pedestrian under crossing at the Santa Rosa Creek Bridge consistent with the design of the City of Santa Rosa's Prince Memorial Greenway Project.
- Enhance bicycle/pedestrian facilities at 3rd Street by widening north sidewalk to 10 ft (3 m) wide and relocating to north of columns away from traffic lanes. South sidewalk would be removed. Expanded shoulder area would allow for addition of bicycle lanes in both directions.
- Widen the existing 4th Street viaduct structure on Route 101, between 3rd and 5th Streets. Both the outside and the inside of the structure will be widened, eliminating the gap between northbound and southbound travel lanes and providing a single, eight-lane bridge with six through-lanes and two auxiliary lanes.
- Construct a new City under crossing at 6th Street. Connect 6th Street as a four-lane local street between Morgan Street and Davis Street. Also, provide 10-ft (3-m) wide sidewalks and bicycle lanes under Route 101 as part of the new 6th Street under crossing.
- Widen the Route 101 bridge over 9th Street. Widening would occur on the inside only, eliminating the gap between northbound and southbound travel lanes and providing a single, eight-lane bridge with six through-lanes and two auxiliary lanes.
- Extend the existing southbound auxiliary lane between College Avenue and the 6th Street off-ramp to SR-12.
- Widen both the northbound and southbound College Avenue off-ramps to increase traffic storage capacity at the intersection with College Avenue, constructing one additional left-turn storage lane at each location.
- Replace the Route 101 bridge at the College Avenue under crossing. The replacement bridge would be a wider single bridge (providing six through lanes) than the existing two two-lane bridges.
- Widen College Avenue and construct one additional through lane in each direction between Morgan Street and Cleveland Avenue. Also, provide 10 ft (3m) wide sidewalks (where not constrained by ROW needs) and bicycle lanes.
- Add an auxiliary lane in each direction between College Avenue and Steele Lane.
- Realign the southbound Steele Lane on-ramp to accommodate Route 101 widening, and increase the ramp capacity. Also widen northbound Steele Lane on-ramp from two to three lanes to increase capacity and widen the northbound off-ramp from one to two lanes to match added auxiliary lane. On eastbound Steele Lane, construct an additional left turn lane onto northbound Route 101.
- Replace the Route 101 bridge at the Steele Lane under crossing. The replacement bridge would be a wider single bridge (providing six through lanes) than the two existing two-lane bridges.

- Construct a standard concrete median barrier 910 mm (36 in) high which would replace both the existing metal beam guardrail in the median between SR-12 and Steele Lane as well as the existing concrete barrier in the median between Steele Lane and Bicentennial Way.
- Install ramp-metering equipment.
- Install traffic operation/information system equipment.

Right of Way would need to be acquired at:
- Burbank Elementary School, in order to accommodate the new collector-distributor road from SR-12 to 3rd Street on northbound Route 101.
- At both 6th Street and Davis Street in order to accommodate the new 6th Street under crossing.
- Along College Avenue for widening purposes.

Soundwalls would be constructed at locations warranted by the Caltrans Noise Study, where reasonableness and feasibility criteria are met and the proposed soundwalls are desired by the affected property owners. See Sections 3.5.2.1 and 3.5.2.3 for a more detailed discussion of the decision-making process for noise wall on the project. All soundwalls would be approximately 4.3 m (14 ft) high and would be placed adjacent to the edge of the roadway pavement. Based on the results of the Caltrans Noise Study, soundwalls may be constructed within the project limits at the following locations:
- Along northbound Route 101 near Burbank Elementary School.
- Along northbound Route 101 between 5th Street and 8th Street.
- Along northbound Route 101 between 8th Street and Lincoln Street.
- Along southbound Route 101 just north of Paulin Creek.
- Along southbound Route 101 between Ridgeway Avenue and College Avenue.
- Along southbound Route 101 between College Avenue and 7th Street.
- Along southbound Route 101 between Santa Rosa Creek and Laurel Street.

Widening the freeway on the outside margin would require the construction of retaining walls to contain areas that would must be filled with soil. Retaining wall heights would range between approximately 1.0 and 5.0 m (3.0 and 16 ft) and could be as long as 50 m (approximately 165 ft). They might be needed at the following locations:

- Along the connector ramp from eastbound SR-12 to southbound Route 101.
- Along the northbound collector ramp from the SR-12 connector to the northbound off-ramp at 3rd Street.
- At the southbound on-ramp at College Avenue.

Figures 2-1 and 2-2A-C show an aerial photograph of the proposed alternative and the location of the items described above. Figure 2-3 shows a typical cross section for the proposed alternative.

2.4 Alternatives Considered But Removed From Further Consideration

The alternatives analysis process initially considered a broad range of alternatives to address the transportation problems on Route 101 in Santa Rosa. The following alternatives were evaluated and eliminated from further consideration based on their feasibility, impacts to environmental resources, and cost.

2.4.1 Mixed Flow Concept Removed Due to Policy Considerations

When considering ways to reduce freeway congestion, adding mixed flow traffic lanes is an obvious approach. While construction of mixed flow traffic lanes on Route 101 in Santa Rosa would help satisfy the purposes of the project outlined in Chapter 1 (Project Purpose and Need), from the beginning of the project's planning, the initiating agencies proposed it as an HOV lane project, as discussed in Section 2.2. The 2002 MTC HOV Master Plan Update identified HOV lane alternatives as having both superior air quality benefits and superior mobility benefits. For these compelling public policy reasons, a mixed flow alternative was not fully evaluated.

2.4.2 Alternatives Removed Due to Design/Construction Restrictions

The following alternatives were removed from consideration due to design and/or construction restrictions.

2.4.2.1 Alternative 1

Alternative 1 is formerly known as the Full Build Out alternative from the earlier public workshop process. This alternative proposed widening Route 101 from four to six lanes with major operational improvements at 9th Street and College Avenue. The two additional lanes would be used as HOV lanes. This alternative reconfigured local access to allow improved traffic flow on the freeway. Other differences between this alternative and the proposed alternative include:

- Provide a grade separated off-ramp between SR-12 and 3rd Street and northbound Route 101. The new separated ramp would not provide access to the 3rd Street off-ramp from SR-12, connect directly to northbound Route 101 without accessing 3rd Street.

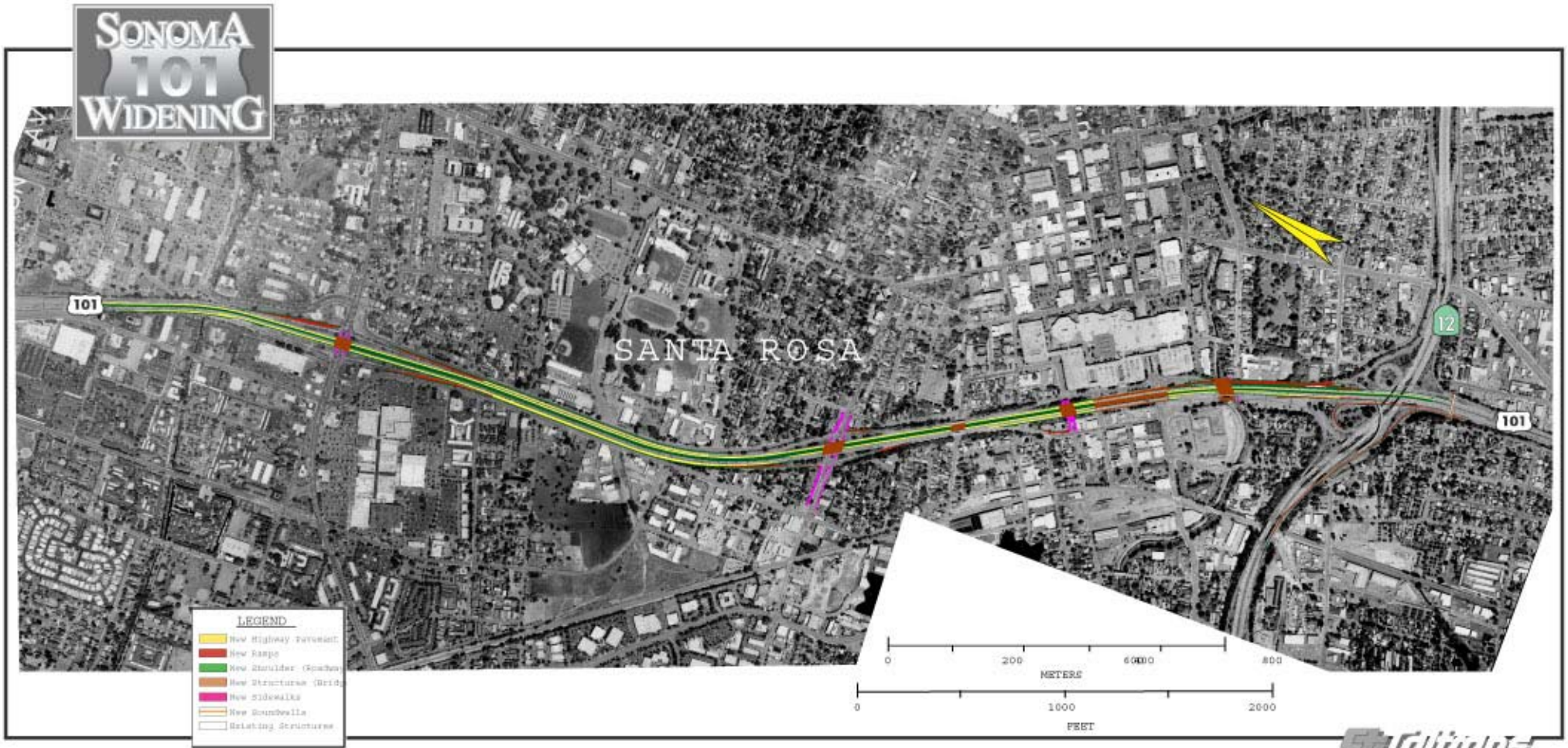

Figure 2-1: Proposed Alternative

SONOMA 101 WIDENING

Figure 2-2A Close-up of Proposed Alternative - Southern Section

Caltrans

Audio/Visual Multimedia Graphics CT1179 060002

SONOMA 101 WIDENING

Figure 2-2B Close-up of Proposed Alternative - Middle Section

Caltrans

Audio/Visual Multimedia Graphics CT1179 08/2002

SONOMA 101 WIDENING

Figure 2-2C Close-up of Proposed Alternative - Northern Section

Caltrans

Audio/Visual Multimedia Graphics CT1179 08/2002

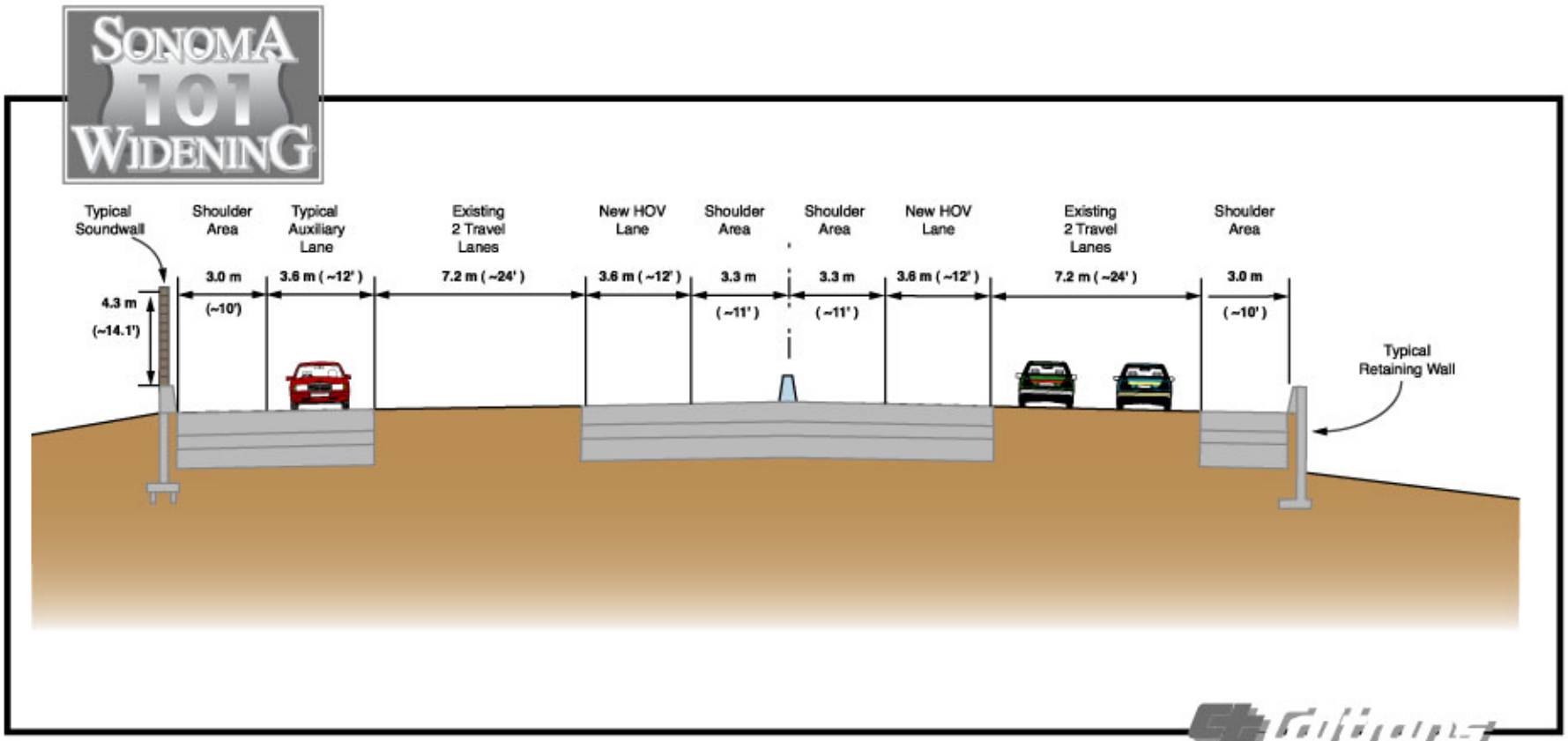

Figure 2-3: Route 101 Typical Cross Section

- Provide a grade-separated on-ramp between SR-12 and 3rd Street and southbound Route 101. The new separated ramp would not provide access to Route 12 from the 3rd Street on-ramp, but would connect directly to southbound Route 101 without accessing SR-12.
- Construct a southbound on-ramp from 9th Street to connect with SR-12. The southbound on-ramp from 9th Street to SR-12 would pass separately above the 3rd Street on-ramp to Route 101, thereby not providing access to SR-12 from the 3rd Street on-ramp. The 9th Street on-ramp would provide the closest access to SR-12 in the absence of the 3rd Street on-ramp.
- Construct a northbound off-ramp from SR-12 to connect with 9th Street. The northbound off-ramp from SR-12 to 9th Street would pass separately above the 3rd Street off-ramp coming from Route 101, thereby not providing access to 3rd Street from SR-12. The 9th Street off-ramp would provide the closest access to 3rd Street in the absence of the 3rd Street off-ramp.
- Eliminate the northbound off-ramp to and the southbound on-ramp from College Avenue.
- Widen the existing frontage roads between 9th Street and College Avenue. These frontage roads would cross 9th Street and connect to the proposed 9th Street on and off-ramps.

Similarities between this alternative and the proposed alternative include:

- Construct soundwalls, where appropriate.
- Construct retaining walls, where appropriate.

This alternative met current State design standards and provided the best improvement to Route 101 traffic flow among all of the alternatives evaluated. However, this alternative was withdrawn from consideration because it would substantially impair accessibility in downtown Santa Rosa. This alternative would remove access to SR-12 from the 3rd Street on-ramp as well as remove access to 3rd Street from the SR-12 connector ramp connecting with northbound Route 101. As expressed in Santa Rosa Resolutions 24128, 24219, and 24551 (see Appendix E), maintaining accessibility and existing access points is a primary component of the project's purpose. Recognizing that this alternative would harm, rather than promote connectivity, and that the project's needs associated with maintaining and improving transportation linkages in Santa Rosa would not be met, the City of Santa Rosa and SCTA asked that this alternative be removed from further consideration.

2.4.2.2 Alternative 2

Alternative 2 is formerly known as the Project Study Report (PSR) alternative from the earlier public workshop process. Like the proposed alternative, this alternative

proposed widening Route 101 from four to six lanes for HOV lanes. Differences between this alternative and the proposed alternative include:

- Shift and realign Route 101 farther west between SR-12 and 3rd Street.
- Construct a grade separated ramp connecting SR-12 to northbound Route 101 and a grade separated ramp connecting northbound Route 101 and 3rd Street.
- Construct a northbound off-ramp to and a southbound on-ramp from 9th Street with auxiliary lanes connecting to SR-12.
- Providing one frontage road on either side of the Route 101 between 9th Street and College Avenue by widening the existing frontage roads and extending the existing roads.

Similarities between this alternative and the proposed alternative include:

- Maintain the southbound Route 101 collector-distributor road from 3rd Street to SR-12, which would collect traffic from the 3rd Street on-ramp and from southbound Route 101, and distribute that traffic to SR-12 or southbound Route 101 further down the road.
- Constructing auxiliary lanes between College Avenue and Steele Lane on Route 101.
- Construct soundwalls, where appropriate.
- Construct retaining walls, where appropriate

Unlike Alternative 1 listed above, the 3rd Street on-ramp would maintain access to both southbound Route 101 and SR-12. However, because the SR-12 to northbound Route 101 on-ramp would be separate from the northbound Route 101 off-ramp to 3rd Street, SR-12 traffic would be prevented from exiting at 3rd Street. This alternative was withdrawn from further study at the request of the City of Santa Rosa and SCTA because it would impair, rather than maintain, accessibility and existing access points in Santa Rosa. Alternative 2 does not fulfill a primary project purpose of promoting connectivity as described in Santa Rosa Resolutions 24128, 24219, and 24551 and does not solve the project's needs associated with maintaining and improving transportation linkages in Santa Rosa.

Five additional variations of Alternative 2 were developed in an effort to further explore this concept. After evaluation and consultation with the City and SCTA, all of these variations were eliminated from consideration.

2.4.2.3 Alternative 3

Alternative 3 is formerly known as the Depressed Freeway alternative from the earlier public workshop process. In response to a request from the Santa Rosa City Council, Caltrans prepared a proposal to depress the section of Route 101 in downtown Santa

Rosa. The proposed depressed freeway section would replace the existing elevated section of Route 101 between 3rd Street and College Avenue. Both an open cut freeway and a fully covered freeway with a new roadway over the covered portion of Route 101 were considered.

The main drawbacks to this alternative are cost as well as the lengthy construction staging period of the depressed freeway. It was estimated that costs for the depressed freeway option would approach four times the cost of the proposed alternative. A major re-routing of local traffic, lasting approximately one year, would be required during construction of a temporary freeway facility. Once the temporary facility was constructed, access across the freeway would be restricted or closed during the three year construction period of the depressed section. Construction would require the removal of approximately 1.1 million cubic yards (841,000 cubic meters) of excavated soils. For these reasons, this alternative was withdrawn from further study with the mutual agreement of the City of Santa Rosa, the SCTA, and Caltrans.

2.5 Project Costs

The preliminary cost estimate of the proposed alternative includes the following major items of grading, drainage, surfacing, bridges, right-of-way, and landscaping.

Estimated Roadway Items:	$ 29,989,000
Estimated Bridge/Structure Items:	$ 27,011,000
Estimated Right-of-Way Items:	$ 4,600,000
Estimated Project Costs:	$ 61,600,000

2.6 Project Schedule

The current project schedule is as follows: the DEA/EIR has completed the public comment period. Assuming the approval of the Final EA/EIR and Federal Highway Administration issuance of the Finding of No Significant Impact (FONSI) by December 2003, construction of the proposed project could begin in late 2004 or early 2005, with completion in 2008.